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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,295	08/31/2001	Gregory S. Pettitt	TI-28576	2019

23494 7590 06/24/2005

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EXAMINER	
HUNG, YUBIN	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/945,295 ✓	PETTITT, GREGORY S.	
	Examiner	Art Unit	
	Yubin Hung	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Arguments

1. This action is in response to amendment filed January 06, 2005.

2. Claims 1-23 are still pending.

3. In view of applicant's amendment, the objections to the specification and claim 2 are withdrawn.

4. In view of the applicant's amendment, the 35 USC § 112 rejections have been withdrawn.

5. Applicant's arguments, see page 7, last paragraph through page 9, filed January 06, 2005, with respect to the rejection(s) of claim(s) 1-23 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ito et al. (US 6,388,674) and Kumada (US 6,563,944).

Claim Objections

6. Claim 9 is objected to because of the following informalities:

- Line 2: "performed" should have been "are performed"

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 19 recites the limitation "the spatial light modulator" in line 7. There is insufficient antecedent basis for this limitation in the claim. [Note: for examination purpose it will be interpreted as "a spatial light modulator."]

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and in view of Ito et al. (US 6,388,674).

12. Regarding claim 1, and similarly claims 12, Oguchi discloses

- Providing at least two projectors
  [Fig. 1, numerals 2 (projectors), 8 (Processing unit); Col. 5, lines 38-56. Note that each processing unit is considered part of the projector since they are coupled to each other]
- communicating each projector's chromaticity data to a main controller
  [Fig. 1, refs 4 & 5 (considered a controller composing refs. 6 and 7); Figs. 2 & 3; Col. 5, lines 46-50; Col. 9, lines 6-23. Note that the chromaticity sensors send chromaticity data of their respective projector to a main controller]
- determining a standard color gamut achievable by each projector
  [Col. 3, lines 8-10; Col. 7, lines 41-60, especially lines 55-60. Note that the common color production region correspond to a standard gamut of the projectors]
- calculating color correction data for each projector based on that projector's chromaticity data and on said standard color gamut
  [Col. 6, line 1 through Col. 8, line 40, especially Equations 1-10. Note that M_{nt} corresponds to the color correction data of the n^{th} projector]
- calculating image pixel values based on input image data and said color correction data
  [Col. 7, Eq. 7]

Oguchi does not expressly disclose

- (each projector) having chromaticity data representing a color gamut of that projector stored therein

However, Ito teaches storing a backward LUT (chromaticity data representing a color gamut) of a device (printer in this case) in a memory (ROM in this case) on that device [Col. 6, lines 4-14].

Oguchi and Ito are combinable because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify Oguchi with the teachings of Ito by storing chromaticity data in each projector. The motivation would have been to be able to allow automated calculation of color correction data (because the controller can obtain chromaticity data from a projector connects directly, instead of having to have someone to enter it) and save cost (by not having to have a separate set of chromaticity sensors).

Therefore, it would have been obvious to combine Ito with Oguchi to obtain the invention of claim 1.

***

13. Claims 2, 5, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Onuma et al. (US 5,287,173).

14. Regarding claim 2, and similarly claim 14, the combined invention of Oguchi and Ito discloses all the limitations of its parent, claim 1.

The combined invention of Oguchi and Ito does not expressly disclose

- Said providing step comprising providing luminance data

However, Onuma teaches using luminance as (part of) chromaticity data [Fig. 1, numeral 1 (light source); Col. 3, lines 28-32; Fig. 2, steps S-3 and S-4; Col. 2, lines 34-60; Col. 4, lines 26-33]

The combined invention of Oguchi and Ito is combinable with Onuma because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Onuma by using luminance as (part of) the chromaticity data of the projectors. The motivation would have been to be able to allow the adjustment of the projected luminance so as to achieve a seamless tiled display.

Therefore, it would have been obvious to combine Onuma with Oguchi and Ito to obtain the invention of claim 2.

15. Regarding claim 5, it is rejected because per the analysis of claims 1 and 2 the chromaticity data (including luminance) is stored in the processing unit and that Onuma further teaches gain adjustment using the luminance data [Fig. 2, steps S-5 and S-6; Col. 2, lines 55-60; Col. 4, lines 33-41]

***

16. Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Morgan et al. (US 6,453,067).

17. Regarding claim 3, the combined invention of Oguchi and Ito discloses all the limitations of its parent, claim 1.

For the following limitations, while the combined invention of Oguchi and Ito discloses the step recited below, it does not expressly disclose that the data for calculating color correction being operated upon include relative luminance data:

- providing luminance data representing the relative luminance of colors generated by each projector

However, Morgan teaches the use of relative luminance for color correction [Abstract: lines 1-11; Fig. 9, numerals 504, 906]

The combined invention of Oguchi and Ito is combinable with Morgan because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Morgan by including relative luminance as (part of) the chromaticity data of the projectors for calculating color correction. The motivation would have been to be able to compensate for the addition of the white segment data, as recited in [Morgan: abstract, lines 8-11]..

Therefore, it would have been obvious to combine Morgan with Ito and Oguchi to obtain the invention of claim 3.

18. Claim 4 is rejected because Morgan further teaches the use of a color wheel in a light projecting path [Fig. 9, numerals 504] and consequently the relative luminance data represents effective light times of each color.

***

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Noguchi (US 6,101,272).

20. Regarding claim 6, the combined invention of Oguchi and Ito discloses all the limitations of its parent, claim 1.

The combined invention of Oguchi and Ito does not expressly disclose

- the step of communicating each projector's chromaticity data is performed by communicating the data in the form of a transfer function matrix

However, Noguchi discloses performing gamut transformation and color correction (i.e., chromaticity data) using matrix operations [Col. 29, lines 39-44] and therefore teaches/suggests communicating the data in the form of a transfer function matrix.

The combined invention of Oguchi and Ito is combinable with Noguchi because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Noguchi by communicating the chromaticity data in the form of a transfer function matrix. The motivation would have been to be because it is a compact form to represent the data and matrix operations can be easily implemented.

Therefore, it would have been obvious to combine Noguchi with Ito and Oguchi to obtain the invention of claim 6.

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21. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Yoshikuni (JP 02-001351, with English abstract).

22. Regarding claim 7, the combined invention of Oguchi and Ito discloses all the limitations of its parent, claim 1.

The combined invention of Oguchi and Ito does not expressly disclose

- the chromaticity data is calculated from primary and white color values

However, Yoshikuni teaches performing color correction on primary and white colors [English abstract: Constitution, lines 8-12]

The combined invention of Oguchi and Ito is combinable with Yoshikuni because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Yoshikuni by calculating chromaticity data from primary and white colors. The motivation would have been to be because the input has been in R, G, and B (primary colors) and that correcting white color can extend the dynamic range of the output device when producing a color near white.

Therefore, it would have been obvious to combine Yoshikuni with Ito and Oguchi to obtain the invention of claim 7.

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23. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Appel (US 5,337,410).

24. Regarding claims 8 and 9, the combined invention of Oguchi and Ito discloses all the limitations of their parent, claim 1.

The combined invention of Oguchi and Ito does not expressly disclose

- (claim 8) said determining and calculating color correction data steps performed by at least one component selected from the group consisting of: a processing system in data communication with each other, and at least one projector functioning at least partially as the main controller
- (claim 9) said determining and calculating color correction data steps (are) performed by one of said projectors

However, Appel discloses a multi-processor system in which a processing unit also acts as a master (i.e., a controller, and note that in Oguchi the controller performs the determining and calculating steps) [Col. 2, lines 10-12].

The combined invention of Oguchi and Ito is combinable with Appel because they have aspects that are from the same field of multi-processing.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Appel by having one of the processing units act as the main controller. The motivation would have been to reduce the system cost.

Therefore, it would have been obvious to combine Appel with Oguchi and Ito with to obtain the inventions of claims 8 and 9.

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25. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Sato (US 6,467,910).

26. Regarding claim 10, the combined invention of Oguchi and Ito discloses all the limitations of it parent, claim 1.

The combined invention of Oguchi and Nagasaka does not expressly disclose

- generating images using a spatial light modulator

However, Sato discloses a projector with a spatial light modulator, among other components. [Fig. 21, 5 (spatial light modulator)]

The combined invention of Oguchi and Ito is combinable with Sato because they are from the same field of endeavor of image projection devices.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Sato by using projectors equipped with a light source, a color wheel, a spatial light modulator, and a projection lens. The motivation would have been to be able to split and modulate light into R,G,B images for display on the screen.

Therefore, it would have been obvious to combine Sato with Oguchi and Ito with to obtain the invention of claim 10.

***

27. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Gibson (US 5,253,043).

28. Regarding claim 11, the combined invention of Oguchi and Ito discloses all the limitations of it parent, claim 1.

Oguchi and Ito do not expressly teaches/suggests calculating color correction data from both primary and secondary colors. However, this limitation is taught by Gibson [Fig. 1; numeral 51; Col. 7, lines 52-66].

The combined invention of Oguchi and Ito is combinable with Gibson because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi and Ito with the teachings of Gibson by deriving color correction from both primary and secondary color. The suggestion/motivation would have been to provide more accurate color correction so that better image can be obtained.

Therefore, it would have been obvious to combine Gibson with the combined invention of Oguchi and Ito to obtain the invention of claim 11.

***

29. Claims 13, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976) and Ito et al. (US 6,388,674) as applied to claims 1 and 12 above, and further in view of Sato (US 6,467,910).

30. Regarding claim 13, the combined invention of Oguchi and Ito discloses all limitations of its parent, claim 12.

The combined invention of Oguchi and Ito does not expressly disclose

- At least one of said at least two projectors comprising a digital micro mirror device

However, Sato discloses a projector with micro mirror device for a spatial filter [Col. 1, lines 12-23].

The combined invention of Oguchi and Ito and Sato are combinable because they are from the same field of endeavor of image projection devices.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi and Ito with the teachings of Sato by using projectors equipped with a micro mirror device. The motivation would have been to be able to split and modulate light into R, G, B images for display on the screen.

Therefore, it would have been obvious to combine Sato with Oguchi and Ito to obtain the invention of claim 13.

31. Regarding claim 19, Sato further teaches/suggests that each projector has two or more spatial light modulators [Col. 1, lines 21-29]. In addition, per the analysis of claim

13, the combined invention of Oguchi, Ito and Sato discloses/teaches all other limitations of claim 19.

32. Regarding claim 20, Sato further teaches/suggests the use of a digital micro mirror device as a spatial light modulator [Col. 1, lines 12-23].

***

33. Claims 17, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976), Ito et al. (US 6,388,674) and Sato (US 6,467,910) as applied to claims 13 and 19-20 above, and further in view of and Onuma et al. (US 5,287,173).

34. Regarding claim 17, and similarly claims 21 and 22, the combined invention of Oguchi and Sato discloses all the limitations of its parent, claim 12, including the storing and delivering of chromaticity data. Sato further discloses the use of a light source [Fig. 21, ref. 2].

The combined invention of Oguchi, Ito and Sato does not expressly disclose that luminance information is also stored and delivered (as part of the chromaticity data).

However, Onuma teaches using luminance as (part of) chromaticity data [Fig. 9, numerals 504, 914, 906].

The combined invention of Oguchi, Ito and Sato is combinable with Onuma because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention, it would have been obvious to one of ordinary skill n the art to modify the combined invention of Oguchi, Ito and Sato with the teachings of Onuma by using spatial light filtered color and luminance as (part of) the chromaticity data of the projectors. The motivation would have been to be able to produce better seamless tiled display.

Therefore, it would have been obvious to combine Onuma with Oguchi, Ito and Sato to obtain the invention of claim 17.

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35. Claims 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976), Ito et al. (US 6,388,674) and Sato (US 6,467,910) as applied to claims 13 and 19-20 above, and further in view of and Morgan et al. (US 6,453,067).

36. Claim 15 is similarly analyzed and rejected as per the analysis of claim 3.

37. Claim 16 is rejected because Morgan further teaches the use of a color wheel in a light projecting path [Fig. 9, numerals 504] and consequently the relative luminance data represents effective light times of each color.

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38. Claims 18, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguchi et al. (US 6,340,976), Ito et al. (US 6,388,674) and Sato (US 6,467,910) as applied to claims 13, 19-20 above, and further in view of Gibson (US 5,253,043).

39. Regarding claims 18, and similarly claim 23, the combined invention of Oguchi, Ito and Sato discloses all limitations of it parent, claim 19.

The combined invention of Oguchi, Ito and Sato does not expressly teaches/suggests deriving color correction data from both primary and secondary colors. However, this limitation is taught by Gibson [Fig. 1; numeral 51; Col. 7, lines 52-66].

The combined invention of Oguchi and Sato is combinable with Gibson because they both have aspects that are from the same field of endeavor of color correction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the combined invention of Oguchi, Ito and Sato with the teachings of Gibson by deriving color correction from both primary and secondary color. The motivation

would have been to provide more accurate color correction so that better image can be obtained.

Therefore, it would have been obvious to combine Gibson with the combined invention of Oguchi, Ito and Sato to obtain the invention of claim 18.

Conclusion and Contact Information

40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Kumada (US 6,563,944) – discloses an automatic substitute device selection method that determines a common gamut

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

42. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yubin Hung
Patent Examiner
June 16, 2005

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